



US005677417A

United States Patent [19][11] **Patent Number:** **5,677,417****Muellen et al.**[45] **Date of Patent:** **Oct. 14, 1997**[54] **TETRAAROXYPERYLENE-3,4,9,10-TETRACARBOXYLIC POLYIMIDES**[75] **Inventors:** **Klaus Muellen**, Cologne, Germany; **Dobrinka Todorova Dotcheva**, Sofia, Bulgaria; **Markus Klapper**, Ruesselsheim, Germany[73] **Assignee:** **Max-Planck-Gesellschaft zur Foerderung**, Munich, Germany[21] **Appl. No.:** **513,769**[22] **PCT Filed:** **Apr. 28, 1994**[86] **PCT No.:** **PCT/EP94/01345**§ 371 Date: **Aug. 29, 1995**§ 102(e) Date: **Aug. 29, 1995**[87] **PCT Pub. No.:** **WO94/25504**PCT Pub. Date: **Nov. 10, 1994**[30] **Foreign Application Priority Data**

May 4, 1993 [DE] Germany 43 14 622.8

[51] **Int. Cl.⁶** **C08G 69/08; C08G 73/10**[52] **U.S. Cl.** **528/310; 528/315; 146/37**[58] **Field of Search** **528/310, 315; 546/37**[56] **References Cited****U.S. PATENT DOCUMENTS**

4,845,223 7/1989 Seybold et al. 546/37

FOREIGN PATENT DOCUMENTS

227 980 7/1870 European Pat. Off. .

445 577 9/1991 European Pat. Off. .

34 13 418 10/1985 Germany .

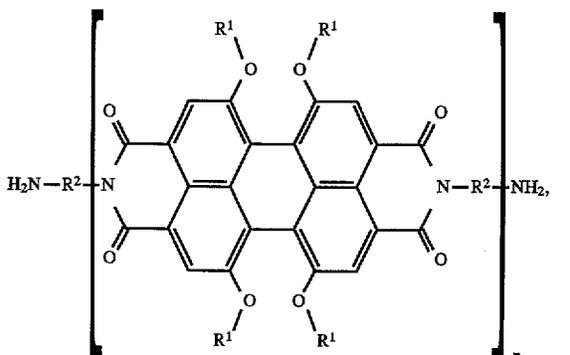
OTHER PUBLICATIONS

Japanese Abst. 58 894/1992.

Japanese Abst. 110 219/1988.

Primary Examiner—James J. Seidleck*Assistant Examiner*—Duc Truong*Attorney, Agent, or Firm*—Keil & Weinkauff[57] **ABSTRACT**

Polymeric tetraaroxyperylene-3,4,9,10-tetracarboxylic diimides of the formula I



(R¹: denotes identical or different aryl radicals which may be substituted by cyano, nitro, halogen, C₁-C₁₈-alkoxy, C₅-C₇-cycloalkyl and/or C₁-C₁₈-alkyl and may each contain up to 24 carbon atoms;

R²: denotes C₂-C₃₀-alkylene groups whose carbon chain may be interrupted by from 1 to 10 oxygen atoms in ether function or by a phenylene or cyclohexylene group, or optionally C₁-C₁₀-alkylene- or oxygen-bridged C₆-C₃₀-arylene or cyclohexylene radicals;

n: is from 2 to 100),

preparation thereof and use thereof and also tetraaroxyperylene-3,4,9,10-tetracarboxylic dianhydrides as intermediates therefor.

4 Claims, No Drawings